REMARKS

In response to the Office Action mailed November 5, 2002, Applicants respectfully request reconsideration. In order to further the prosecution of this application, amendments have been made in the claims, and the following remarks are submitted.

Claims 1-13 were previously pending in this application. By this amendment, claims 1 and 3-11 have been amended and new claims 14-20 have been added. As a result, claims 1-20 are pending for examination, of which claims 1, 9, 14 and 17 are independent claims. The application as presented is believed to be in allowable condition. Applicants note with appreciation the indication of allowable subject matter in claims 5 and 6.

A. Rejection under 35 U.S.C. §112

The Office Action states that claim 3 is rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to point out and distinctly claim the subject matter which Applicants regard as the invention. Claim 3 has been amended for clarity and to improve the readability of the claim, and also to overcome this rejection. Claim 3, as amended, recites "the electromagnetic transponder of claim 1, wherein a capacitive element of the parallel oscillating circuit is provided by a stray capacitance of an inductance of the parallel oscillating circuit." Applicants assert that Fig. 1 illustrates the transponder having a parallel oscillating circuit with a capacitive element C2 that, as claimed in claim 3, may be provided by a stray capacitance of the inductance L2. Accordingly, withdrawal of the rejection of claim 3 under 35 U.S.C. §112, second paragraph, is respectfully requested.

B. Rejections Under 35 U.S.C. §103

The Office Action rejects claims 1, 2, 4 and 7-13 under 35 U.S.C. §103(a) as being obvious over the Applicants' admitted prior art (AAPA) in view of U.S. Patent No. 6,424,820 to Burdick (hereinafter Burdick). Applicants respectfully traverse the rejection.

Burdick discloses an inductively coupled high frequency wireless link between transceiver units for unidirectional or bidirectional transmission of high fidelity signals in short-range wireless communication systems (col. 1, lines 5-10). According to Burdick, employing inductively coupled transmission schemes and Faraday shielding techniques substantially

reduces the electric field portion of the transmitted electromagnetic field during transmission, while the magnetic field portion is substantially unaffected. Also, because the transmitting and receiving antennas are inductively coupled, signal strength falls off rapidly with distance and thus many users can be accommodated in a small physical area without interference (col. 6, lines 7-15).

The Office Action asserts that AAPA teached an electromagnetic transponder of the type including a parallel oscillating circuit and adapted to being excited by a series oscillating circuit of a read/write terminal when the transponder enters the field of the terminal. The Office Action states that Burdick teaches the coupling coefficient between the respective oscillating circuits of the terminal and the transponder rapidly decreases when the distance separating the transponder from the terminal becomes greater than a predetermined value. The Office Action further asserts that it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the teaching of Burdick into the system disclosed in AAPA so that the user can be accommodated in a small physical area without interference. However, The Office Action fails to present a prima facie case of obviousness because a) there is no motivation provided in the art of record for one of ordinary skill in the art to combine Burdick and AAPA, and b) even if one were to make the asserted combination, Applicants' claims patentably distinguish over the asserted combination.

Lack of Motivation to Combine

Contrary to the assertion in the Office Action, it would not have been obvious to one of ordinary skill in the art at the time the invention was made to provide the teaching of Burdick into the system disclosed in AAPA so that the user can be accommodated in a small physical area without interference. The system discussed in AAPA contemplates the use of electromagnetic transponders (for example, electronic passes, prepaid pass cards, etc.) where it may be desirable to guarantee that a transponder only operates within a predetermined distance relation with a read-write terminal. More specifically, AAPA discusses operation of transponders in extreme proximity to the terminals, that is, in a relation generally defined by a distance smaller than 1 cm separating the respective antennas of the transponder and of the read-write terminal (Applicants' specification, p. 3, lines 12-17). Burdick, on the other hand, discusses short-range wireless communication systems, such as between a stereophonic unit and

an earpiece receiver, where the distance between the respective antennas of the headset and the stereophonic unit is on the order of 1 to 3 meters (col. 6, lines 12-21). Therefore, "users" in the system discussed in AAPA are already accommodated within a much smaller physical area than is disclosed by Burdick. Thus, the motivation set forth in the Office Action for combining Burdick with AAPA, namely so that users can be accommodated within a small physical area, is invalid. The art of record provides no motivation for combining Burdick with AAPA, and the suggested combination is therefore improper.

Applicants' claims patentably distinguish over the asserted combination.

Even if one were to make the combination of Burdick and AAPA suggested in the Office Action, which combination would be improper, Applicants' claims patentably distinguish over the asserted combination. In particular, Burdick discloses that because the transmitting and receiving antennas are inductively coupled, signal strength falls off rapidly with distance (col. 6, lines 12-14). However, Burdick does not disclose or suggest that this rapid decrease occurs only when the distance separating the electromagnetic transponder from the read-write terminal becomes greater than a predetermined value, as is claimed in Applicants' claim 1. Therefore, Burdick, whether taken alone or in combination with AAPA, does not disclose or suggest all the limitations recited in Applicants' claim 1. Accordingly, withdrawal of this rejection is respectfully requested.

Each of dependent claims 2-4 and 7-13 depend either directly or indirectly from independent claim 1 and are therefore allowable for at least the same reasons as discussed for claim 1. Accordingly, withdrawal of the rejection of claims 2-4 and 7-13 is respectfully requested.

The Office Action also rejects claim 3 under 35 U.S.C. §103(a) as being obvious over AAPA in view of Burdick and in further view of Duan (U.S. 6,281,794). Applicants respectfully traverse this rejection.

Claim 3 depends from claim 1 and therefore incorporates all the limitations recited in claim 1. Therefore, claim 3 is allowable for at least the same reasons as discussed for claim 1. Accordingly, withdrawal of the rejection of claim 3 is respectfully requested.

C. Newly Added Claims

Each of new claims 14-20 is supported by the specification as filed and no new matter is added by their inclusion.

New independent claim 14 recites "A transponder ... wherein a stray capacitance of the inductance acts as a capacitive element for the oscillating circuit." This limitation is not disclosed in the prior art of record, whether taken alone or in combination. Accordingly, claim 14 is in condition for allowance.

New dependent claims 15 and16 depend from claim 14 and are therefore allowable for at least the same reasons as claim 14.

New independent claim 17 recites a system for data transfer, "wherein the first and second inductive elements and first and second capacitive elements are sized such that a coupling coefficient between the series oscillating circuit and the parallel oscillating circuit decreases rapidly when a distance between the terminal and the transponder is greater than a predetermined value." As discussed above, the prior art of record does not disclose or suggest the limitation of the coupling coefficient decreasing rapidly "when a distance between the terminal and the transponder is greater than a predetermined value", as recited in claim 15. Accordingly, claim 15 is in condition for allowance.

New dependent claims 18-20 depend from claim 17 and are therefore allowable for at least the same reasons as claim 17.

D. Conclusion

In view of the foregoing amendments and remarks, this application should now be in condition for allowance. A notice to this effect is respectfully requested. If the Examiner believes, after this amendment, that the application is not in condition for allowance, the Examiner is requested to call the Applicants' attorney at the telephone number listed below.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicant hereby requests any necessary extension of time. If there is a fee occasioned by this response, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 23/2825.

Respectfully submitted,
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MARKED-UP CLAIMS

Claims 1 and 3-11 have been amended as follows:

1. (Amended) An electromagnetic transponder [of the type] including a parallel oscillating circuit adapted to being excited by a series oscillating circuit of a read/write terminal when the electromagnetic transponder enters the field of the read/write terminal, wherein [the] components of the parallel oscillating circuit of the transponder are sized so that [the] a coupling coefficient between [the] respective oscillating circuits of the electromagnetic terminal and of the read/write transponder rapidly decreases when [the] a distance separating the electromagnetic transponder from the read/write terminal becomes greater than a predetermined value.

3. (Amended) The electromagnetic transponder of claim 1, wherein a capacitive element of [having an] the parallel oscillating circuit [not including a capacitor, the] is provided by a stray capacitance of [the] an inductance of the parallel oscillating circuit. [performing the function of a capacitive element for the oscillating circuit.]

4. (Amended) The electromagnetic transponder of claim 1, wherein [an] inductance of the parallel oscillating circuit is maximized, a capacitance of this oscillating circuit being minimized.

5. (Amended) The electromagnetic transponder of claim 1, wherein [the] an inductance of the parallel oscillating circuit is chosen in accordance with the following relation:

$$kopt = \sqrt{\frac{R1L2}{R2L1}},$$

where kopt is [the] a coupling coefficient providing a maximum voltage across the parallel oscillating circuit, R1 is [the] a series resistance of the series oscillating circuit, R2 is [the] an equivalent resistance of the transponder brought in parallel on inductance L2, and L1 is [the] an inductance of the series oscillating circuit.

6. (Amended) The electromagnetic transponder of claim 1, wherein the components of the parallel oscillating circuit of the transponder are sized based on an operating point at a zero distance, chosen to correspond to a coupling coefficient smaller than an optimal coupling coefficient in accordance with the following relation:

$$V2max(kopt) = \sqrt{\frac{R2}{R1}}\frac{Vg}{2},$$

where V2max is [the] a voltage across the parallel oscillating circuit for [the] optimal coupling between the parallel and series oscillating circuits, R1 is [the] a series resistance of the series oscillating circuit, R2 is [the] an equivalent resistance of the transponder brought in parallel on its oscillating circuit, and Vg is [the] an excitation voltage of the series oscillating circuit.

7. (Amended) The electromagnetic transponder of claim 1, wherein [the] a number of turns of [the] an inductance of the parallel oscillating circuit of the transponder is in a range of [ranges] between 5 and 15.

8. (Amended) The electromagnetic transponder of claim 1, wherein [the] respective values of [the] a capacitance and of [the] an inductance of the parallel oscillating circuit range between 5 and 100 pf and between 2 and 25 μH.

9. (Amended) A terminal for generating an electromagnetic field adapted to [cooperating] cooperate with at least one transponder when said transponder enters [this] the electromagnetic field, including a series oscillating circuit for generating the electromagnetic field, [this] the series oscillating circuit being sized so that [the] a coupling coefficient between the [respective] series oscillating [circuits] circuit of the terminal and an oscillating circuit of the at least one transponder strongly decreases when [the] a distance separating the at least one transponder from the terminal becomes greater than a predetermined value.

10. (Amended) The terminal of claim 9, wherein [the] components of [its] the series oscillating circuit are sized to fulfill [the] operating conditions of the transponder of claim 1.

11. (Amended) The terminal of claim 10, wherein [the] an inductance of [its] the series oscillating circuit includes a single turn.